The CHEMIST

DECEMBER, 1942 VOL. XIX, No. 9

The Season's Greetings
and sincere wishes for
good tidings in the
New Year

GREATER *Speed* AND *Accuracy* WITH

VYCOR BRAND LABORATORY WARE

Since its introduction in 1940, Vycor brand Ware, fabricated from 96% Silica Glass No. 790, has proved to be the most versatile of all laboratory ware.

Exceptional chemical stability, high softening point and extremely high resistance to heat shock are its outstanding qualities. Reactions can be carried on with greater *speed* and *accuracy*—a saving of valuable time! New fields are open to the scientist because of the upper temperature limit of this glass.

Vycor brand Ware has proved to be the perfect complement to the time-tried "Pyrex" Glassware which for over a quarter of a century has been so eminently satisfactory for day-in, day-out all-around laboratory service.

Vycor brand Laboratory Glassware is described in detail in Catalog LP21. Order from your regular laboratory supply dealer.

PROPERTIES OF VYCOR BRAND 96% SILICA GLASS NO. 790

Loss in weight, 100 lbs. steam pressure for 96 hours	0.0001 grams per sq. cm.
Loss in weight, boiling 6 hours in 5% NaOH	0.0015 grams per sq. cm.
Loss in weight, 5% HCl for 72 hours at 80° C.	Negligible
Softening Point, Approx.	1500° C.
Linear Coefficient of Expansion per ° C.	0.0000008
Specific Gravity	2.18
Refractive Index	1.458
Tensile Strength	Comparable to Chemical Glass No. 774
Loss in Weight on Heating and Cooling	Negligible
Visible Light Transmission for 2 mm thickness	92%
Ultra Violet Transmission at 254 millimicron line for 2 mm thickness	2 to 4%
Temperature Limit in Service	900° C.

PYREX T.M. REG. U.S. PAT. OFF. CORNING *means* Research in Glass VYCOR TRADE MARK REG. U.S. PAT. OFF.

VYCOR BRAND LABORATORY WARE

"PYREX" and "VYCOR" are registered trade-marks and indicate manufacture by

CORNING GLASS WORKS • CORNING, NEW YORK

Production on the Wing!

Throughout the nation production is soaring. But it must move still faster. Wartime demands, in ever-increasing volume, are pouring in upon manufacturers.

Every day, chemists and production executives engaged in new fields of work are faced with new problems. Every day, their need for tonnage chemicals of exacting specifications is more urgent. To these men, Baker offers assistance. We, too, have enlarged our facilities and you can get tonnage chemicals of unusual purity from Baker.

You can rely upon Baker as a reliable source of chemical supply. The combined knowledge of Baker's Technical, Executive and Manufacturing Staffs is at your service to help you meet any wartime problem.

In the nation's leading laboratories, Baker's Analyzed C.P. Chemicals and Acids continue to be used to determine the *qualities* and properties of countless products.

The actual analysis on the Baker label allows chemists to chart their courses for ***known,*** rather than unknown, percentages of impurities. It helps speed production.

More than 60 leading Laboratory Supply Houses distribute Baker's Analyzed C.P. Chemicals and Acids. Order from your favorite supplier.

J. T. BAKER CHEMICAL CO.

PHILLIPSBURG, NEW JERSEY

NEW YORK 420 Lexington Ave. | PHILADELPHIA 220 South 16th St. | CHICAGO 435 N. Michigan Ave.

BAKER'S ANALYZED C. P. CHEMICALS ARE SOLD BY THESE REPRESENTATIVE LABORATORY SUPPLY HOUSES

The CHEMIST

Publication of
THE AMERICAN INSTITUTE OF CHEMISTS, INC.
V. F. KIMBALL, *Editor*, 233 Broadway, New York City

VOLUME XIX DECEMBER, 1942 NUMBER 9

THE AMERICAN INSTITUTE OF CHEMISTS
HOWARD S. NEIMAN, *Secretary*
233 Broadway
New York, N. Y.

Entered as second class matter April 3, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912.
Issued monthly except in June, July and August at 233 Broadway, New York, N. Y.
Subscription price, $2.00 a year. Single copy, this issue $0.25

CONTRIBUTING EDITORS (Continued)

IN THIS ISSUE

Scientific and Technical Cooperation of the United Nations

Individualism and Co-operation

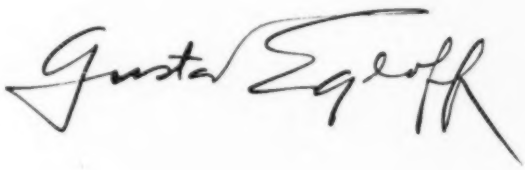
AS BEN FRANKLIN, one of our earliest scientists, once said,

"We must all hang together, or
assuredly we shall hang separately."

Perhaps Franklin had no thought 150 years ago of scientific and technical unity; however, it behooves us in this world at war to co-operate to the maximum extent of knowledge, not in the United States of America alone, but throughout the United Nations as well, for the purpose of preserving the democratic way of life.

Rugged individualism is commendable but it must be subordinated to co-operation whenever necessary to assure victory.

The United Nations have gone a long way since Pearl Harbor. Herculean tasks are still ahead, but they will be conquered by unity of thought and action in which the scientist and technologist play the leading rôle.



Technological Mobilization

UNITED STATES SENATE
Committee on Military Affairs
Sub-Committee on Technological Mobilization

November 25, 1942

Dr. Gustav Egloff, President
American Institute of Chemists
Universal Oil Products Co.
310 S. Michigan Avenue
Chicago, Illinois

Dear Dr. Egloff:

I am enclosing a copy of a bill to create an "Office of Technological Mobilization," along with transcripts of the first hearings of the Senate Sub-Committee on Technological Mobilization, which has been appointed to inquire into the general problem involved in the bill.

As you will see from the testimony, the bill has already received support from Mr. Donald M. Nelson, Mr. Henry J. Kaiser and others. The Sub-Committee, of which I was appointed chairman, is still carrying on hearings and continuing the study of the subject.

You will recognize that this is a matter of basic concern to members of scientific and engineering societies; and we are most anxious to have as much informed opinion as possible. Consequently, I am writing you to ask if you would be good enough to go over the data I am enclosing and to let me have any comments and discussion which occur to you. The bill as it stands is, of course, not necessarily in its final form, but is subject to revision or amendment later. Therefore, in asking for your help, I am first interested in comments upon the general objectives of the bill, and secondarily, in detailed discussion of specific measures of the bill and how they might be improved or extended.

This bill is under intensive study now. Action may be taken on it within a few weeks. Therefore, I should appreciate it if you would let me have your own thoughts on the subject; and especially if you would let me hear from you promptly so that we may consider your comments before the bill comes up for action.

If, in addition to your own comments, you can suggest any other officers of your society who would be interested in this bill, please let me know and I shall send them copies of the hearings which I am now

enclosing. However, please do not let the thought of the interest of other officers of your society delay your own personal response, which I am most anxious to have.

With all good wishes, I am,

Sincerely yours
Harley M. Kilgore, Chairman

Senator Harley M. Kilgore, Chairman
Sub-Committee on Technological Mobilization
Committee on Military Affairs
United States Senate

My dear Senator Kilgore

I am deeply appreciative of your letter of November twenty-fifth with a copy of Senate Bill 2721 and the hearings on the creation of the Office of Technological Mobilization, upon which I take the liberty of commenting as follows:

The passage of Senate Bill 2721 to establish the Office of Technological Mobilization in my opinion would be exceedingly detrimental if not disastrous to the war effort. I speak as a research director with more than twenty-five years' experience in the petroleum industry.

My convictions are based on the following:

(1) Every laboratory in the nation is at the service of the Government. These laboratories are headed and staffed by specialists in their particular fields, whether in universities, colleges, research foundations, or as individuals and corporations. It is unnecessary for the government to take these over.

(2) Important and diverse research and developments vital to the war, assigned by the war, navy and other governmental departments, are proceeding at full speed in such laboratories in the hands of the men known to be best qualified to carry them on. These programs would be disrupted by any change in management.

(3) Technologists, though primarily individualists, are submerging personalities in co-operative research of the widest scope, intent only with getting the job done as well and as speedily as possible.

(4) To center these myriad researches in one institution would throw the programs out of gear, causing months or perhaps years of delay while adaptation to the new conditions took place, and during this time we could lose the war.

(5) Leading companies in the oil industry, vigorous competitors in peacetime, are working together, disclosing to each other their processes, information and "know how" relating to the manufacture of 100-octane aviation gasoline, the components of synthetic rubber, toluene for T.N.T. and other war materials produced from petroleum. There are no secrets in the oil industry for the duration.

During the past week in Chicago, conferences were held, headed by the war department; Technical Advisory Committee to the Petroleum Industry War Council, where key research men of at least twenty oil companies, all that had any helpful knowledge of the subjects, presented and exchanged the knowledge and experience they had acquired since other recent meetings. Their researches, pilot plant tests and full scale commercial production of a number of key products for the war effort were freely discussed.

Other industries likewise have pooled their knowledge in the same manner. Never in the history of the United States has there been such co-operation among competing companies in various key industries.

It takes many years to develop a research organization to the highest efficiency. It is not a matter simply of training each man, but it is working as a team, each meshing his research into that of others so that the composite results will be productive for war or peace.

If you take a man out of an organization where he has worked for a number of years, where his studies tie in with that of others, and put him into a new environment, you slow him up. It takes time for him to re-orient himself, even if he is in the same field; and if he is put into another field, priceless time is lost—he cannot learn the new field in a few months.

To summarize—

Individual research and development men and organizations are working single-mindedly to win the war, freely sharing information that is pertinent in any way to the war production program.

They could do no more if they were directly employed by the government, and priceless time would be lost in the changeover.

Industrial companies have forgotten the competitive race and are co-operating wholeheartedly, sharing their experience and their "know how" in an all-out effort.

Finally, should this bill pass, in my opinion it would be helpful to the Axis powers by slowing up our war effort.

Very truly yours,

Gustav Egloff.

SENATE BILL

S. 2721

77th Congress, 2nd Session.

In the Senate of the United States

August 17, 1942

Mr. Rosier (for Mr. Kilgore) introduced the following bill; which was read twice and referred to the Committee on Military Affairs.

A BILL

To establish an office of Technological Mobilization, and for other purposes.

Whereas the war in which this Nation and the other United Nations are engaged for the preservation of democracy and freedom and the liberation of the conquered peoples is a conflict in which victory highly depends upon the degree of mechanization of the armed forces; and

Whereas the full and immediate utilization of the most effective scientific techniques for the improvement of production facilities and the maximization of military output is essential for the successful prosecution of the war to a sure and speedy victory: Therefore

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled.

That this Act may be cited as The Technology Mobilization Act.

Sec. 2. The purposes of this Act shall be—

(a) To regain, maintain and surpass our previous technical preeminence and attainments; and to make forever secure America's world leadership in the practical application of scientific discoveries, a leadership now gravely threatened by the arms and achievements of the Axis;

(b) To mobilize for maximum war effort the full powers of our technically-trained manhood; and similarly to mobilize all technical facilities, equipment, processes, inventions, and knowledge; and

(c) To accomplish the above objectives—

(1) by breaking the bottlenecks that today choke up these technical forces and result in the diversion of vast amounts of material, time, and effort from war and essential civilian use to less essential and nonessential uses; by making fully available all patents and all applied technical knowledge for full war use;

(2) by fully utilizing the facilities of small business, technological laboratories, inventions and inventors, and maximizing the output of war goods and essential civilian supplies;

(3) by providing adequate supplies of substitutes for goods normally containing critical materials and by discovering and developing new sources of critical raw materials;

(4) by stimulating new discoveries and inventions, developing more efficient materials and products, and improving standards of production; and, in general,

(5) by promoting the use and development of those processes, products, and materials most efficient for the successful prosecution of the war to a speedy and secure victory.

Establishment of Independent Office

Sec. 3 (a) There is hereby created an independent agency to be known as the Office of Technological Mobilization under the direction of a Director to be appointed by the President of the United States, by and

with the advice and consent of the Senate, who shall be known as the Director of Technological Mobilization and who shall receive a salary of $12,000 a year.

(b) The Office of Technological Development shall have power to select, employ, and fix the compensation of such officers, employees, attorneys, and agents as shall be necessary for the transaction of the business of the office; and to define their authority and duties without regard to the provisions of the Classification Act of 1923, as amended. All such personnel where employed on a full-time basis shall sever all private business connections.

Mobilization of Personnel and Facilities

Sec. 4. (a) The Office of Technological Mobilization is authorized and directed to have full access to all governmental and private information and to collect such additional information as may be necessary bearing on—

(1) the number, location, qualification, and current activities of all scientifically or technically trained personnel; including personnel engaged in public or private activity whether or not currently engaged in scientific research and development; and

(2) the number, location, and current use being made of all scientific technical facilities, public or private, in use or capable of adaptation for use in scientific research and development.

(b) The Office is authorized and directed to appraise the current use being made of scientific and technical personnel and facilities, both public and private, and to draft all such personnel and facilities failing to submit or to accept plans for immediate conversion of their efforts to work deemed more essential by the Office of Technological Mobilization. Such personnel as may be drafted for Government assigned and financed work will be compensated at reasonable rates of compensation prevailing for professional, technical, and consultant work and deemed just and fair according to precedents of the Federal service but without regard to the Classification Act of 1923, as amended. All such personnel where employed on a full-time basis on Government-financed projects whether or not working directly for the Office or other Federal agency shall sever all other private business connections.

Development of New and Improved Techniques, Processes, and Products

Sec. 5. (a) The Office of Technological Mobilization is authorized and directed to collect or acquire, for reasonable compensation where it deems proper any and all scientific, technical, and other information which it deems may be useful in planning or carrying out the development of a new or improved technique, process, or product; and the Office shall have access to all such information held by public agencies or private persons including full information on current research programs and developments, together with details and characteristics of processes, materials, and products, both military and civilian. Reasonable compensation shall be determined by the Office, subject to review by the courts.

(b) The Office of Technological Mobilization is authorized and directed to review all projects for research and development, including practical development of inventions which may be brought to its attention; and it shall promote such projects as it deems appropriate that are consistent with the purposes of this Act; and it shall also

initiate through a staff of its own such additional projects as it can, utilizing any or all of the following methods:

(1) Grants or loans to public agencies or private persons for payment of costs of personnel, supplies, expansion, and erection of additional research facilities, and such other expenses as the Office may determine are essential to the completion of particular projects.

(2) Allocations of needed personnel, facilities, and materials in accordance with sections 4 and 8 of this Act.

(3) Provision of technical, including patent information collected, acquired, or prepared by the Office.

(4) Establishment of new research facilities under the direction of the Office.

(5) Erection of pilot plants or other semiworks production facilities.

(6) Assign projects for completion to public agencies or responsible private persons and make necessary grants or loans for conducting such research.

(c) The Office is authorized and directed to review established production facilities, techniques, and products with a view to their improvement (or improved use) including saving of production time and labor, conversion of idle facilities, better utilization of raw material, reduced use of critical materials, improved product characteristics, and such other improvements as may be deemed consistent with the purposes of this Act, and shall develop such improvements through any and all of the methods enumerated under section 5 (b).

Integration of Technical Developments into the War Production Program

Sec. 6. The Office of Technological Mobilization is authorized and directed (a) to encourage the fullest possible adoption of the most efficient products, materials, and production and service techniques by providing specific information regarding them to the armed services, the War Production Board and to other proper agencies of the Federal Government, as well as to factory officials and technical personnel engaged in war and essential civilian production; and to encourage the adoption of such products, materials, and techniques by providing technical guidance and advice wherever necessary.

(b) To investigate any case in which it is believed producers of war and essential civilian supplies or services are continuing to use inefficient designs, processes, or materials; to evaluate the factors affecting such failure to adopt most efficient methods and to present written reports regarding such cases to the War Production Board, the armed services, the Maritime Commission, and other Federal agencies or officials concerned, together with recommendations for appropriate action.

(c) to dissolve hindrances to the voluntary adoption of improved products, processes, and materials by compelling the licensing of all patents, secret processes, and special technical information at reasonable compensation in order to foster their wide utilization, and by taking similar vigorous action in overcoming all other obstructions to maximum technical efficiency in war production. Reasonable compensation shall be determined by the Office, subject to review by the courts.

Sec. 7. The Office shall consult with and advise, on its own initiative or on request, any Government officer or

agency or private person regarding research and technical developments, or problems which fall within the purposes of this Act.

Sec. 8. The Office shall make representation to the War Production Board for the allocation of critical materials, machinery, and equipment for use for specific research and development projects and all requests for such allocations whether by private or public agencies shall be made only through the Office.

Sec. 9. (a) There is hereby created a body corporate under the name Technological Mobilization Corporation (hereinafter referred to as the Corporation). The principal office of the Corporation shall be located in the District of Columbia, but the Corporation may establish such branch offices in other places in the United States as may be determined by the board of directors.

(b) The Corporation shall have capital stock of $200,000,000 subscribed for by the United States through the Secretary of the Treasury, and payment for which shall be subject to call, in whole or in part, by the board of directors of the Corporation. There is hereby authorized to be appropriated the sum of $200,000,000 for the purpose of enabling the Secretary of the Treasury to make payment for such capital stock when payment is called by the board of directors. Receipts for payments by the United States for or on account of such capital stock shall be issued by the Corporation to the Secretary of the Treasury and shall be evidence of the stock ownership by the United States.

(c) The Corporation shall not have succession, beyond July 1, 1952, except for purposes of liquidation, unless its life is extended beyond such date pursuant to an Act of Congress. It shall have power to adopt, alter, and use a corporate seal, which shall be judicially noticed; to make contracts; to lease or purchase such real estate as may be necessary for the transaction of its business; to sue and be sued; to complain and to defend in any court of competent jurisdiction, State or Federal; to select, employ, and fix the compensation of such officers, employees, attorneys, and agents as shall be necessary for the transaction of the business of the Corporation; to define their authority and duties, require bonds of them, and fix the penalties thereof; and to prescribe, amend, and repeal, by its board of directors, by-laws, rules, and regulations governing the manner in which its general business may be conducted and the powers granted to it by law may be exercised and enjoyed. The board of directors of the Corporation shall determine and prescribe the manner in which its obligations shall be incurred and its expenses allowed and paid. The Corporation shall be entitled to the free use of the United States mails in the same manner as the executive departments of the Government. The Corporation, with the consent of any board, commission, independent establishments, or executive department of the Government, including any field service thereof, may avail itself of the use of information, services, facilities, officers, and employees thereof in carrying out the provisions of this Act.

(d) The management of the Corporation shall be vested in a Board of four directors to be appointed by the President of the United States and a chairman who shall be the Director of the Office of Technological

Mobilization. The four directors shall be compensated at the rate of $10,000 per annum. The Chairman shall serve without compensation other than his compensation as Director of the Office of Technological Mobilization. The four directors shall be full-time employees of the Corporation and shall be in the employment of no other corporation or organization while they shall remain in the employment of the Corporation.

(e) All moneys of the Corporation not otherwise employed may be deposited with the Treasurer of the United States subject to check by authority of the Corporation, or in any Federal Reserve bank. The Federal Reserve banks are authorized and directed to act as depositaries, custodians, and fiscal agents for the Corporation in the general performance of its powers conferred by this Act. All insured banks, when designated by the Secretary of the Treasury, shall act as depositaries, custodians, and financial agents for the Corporation.

(f) The Corporation is empowered (1) to make loans, grants, or advances to private persons, firms, corporations, or associations on such terms and conditions and with such maturities and conditions as it may determine, to enable the construction and development of research laboratories, semi-works plants, and pilot plants, or the conversion or expansion of such laboratories, semi-works plants or pilot plants, and to finance the acquisition of equipment, facilities, machinery, supplies, or materials; and such loans, grants, or advances may be made or effected either directly or in cooperation with banks or other lending institutions through agreements to participate or by the purchase of participations or otherwise; (2) to purchase or lease such real estate, equipment, facilities, machinery, materials, or supplies, as it may deem desirable for the construction and equipping of such laboratories, semi-works plants, and pilot plants, to be operated under the direction of the Corporation, as it may consider necessary and desirable; (3) to patent such new processes, products, and developments as may be discovered or developed in the laboratories, semi-works plants, or pilot plants financed or operated by the Corporation, or developed or discovered by any employee of the Corporation; (4) to lease such patents on such terms and with such conditions as the Corporation shall deem desirable and consistent with the purposes of this Act.

Periodic Reports to the President and Congress

Sec. 10. The Director shall file a report on the operations of the Office and the Corporation under this Act every sixty days, to the President, the Vice President, and the Speaker of the House of Representatives. Such report shall briefly describe all projects initiated and completed since the previous report; and summarize progress on outstanding activities; it shall summarize progress achieved and problems encountered in the dissemination and application of new and improved techniques, materials, and products; it shall also include any comments and recommendations which the Director shall deem appropriate in order to further the purposes of this Act. The Office shall publish the Director's periodic report excluding, however, from this published report all material which, in the opinion of the Director, might give aid or comfort to the enemy.

Ipatieff's Influence on Industry

By Dr. Gustav Egloff, F.A.I.C.

President, AMERICAN INSTITUTE OF CHEMISTS *and*
Director of Research, Universal Oil Products Company, Chicago

Banquet in Honor of Professor V. N. Ipatieff—
November 20 — Adventurers' Club — Chicago.

Dr. and Mrs. V. N. Ipatieff.

IT IS my privilege this evening to discuss Professor Vladimir N. Ipatieff's impact and influence on industry, leaving the rest of the story of his remarkable activities to other speakers.

We are gathered here to honor a rare man; in fact, he is unique, so far as I know, because he has reached at the same time three important milestones in his life.

It is his arrival at these milestones which we are celebrating, and they are:

Fifty years in the chemical profession.
Fifty years of happy married life.
An extremely youthful seventy-fifth birthday.

This trinity alone would give distinction to our honored guest.

Professor Ipatieff has packed into fifty active years in chemistry, discoveries and developments which have profoundly affected not only world chemistry but world industries as well.

He has made discoveries and invented processes that are converting our rich, natural resources, the hydrocarbons, into veritable bullets which will go a long way toward winning the victory for the United Nations.

Not the least of his achievements was the organization of chemical industry during World War I and subsequently in that great country in which he was born, Russia.

Later, after the revolution, he was given a similar assignment by the Soviet government. For the splendid successes in this work he was awarded the highest decorations from both the Czarist and the Soviet governments.

Today, when we celebrate fifty years' research activity of Professor Ipatieff and regard him as a connecting link between American science and Russian science, the latter too little known in this country, one of his assignments stands out as having special significance. In 1927, after the devastating first World War and the revolution, the work of reconstruction in the U.S.S.R. was about to start, the Academy of Sciences had to assign to someone the task of re-establishing and expanding its contacts with foreign scientific bodies. This august body called upon V. N. Ipatieff to head a special committee charged with the duties of "Ambassador of Russian Science".

However, I believe that in the twelve years Ipatieff has been in the United States with Universal Oil Products Company he has accomplished his greatest work. And why not? For here full freedom reigns. In this atmosphere the human spirit may roam without fetters of any kind. Here a man can grow to his fullest stature.

In considering the great contributions of Professor Ipatieff toward winning of this war, we must not overlook his similar services which helped to win the first World War for the Allies. During that great conflict he was in full charge of all Russian chemical activities, with the rank of general in the army of Czar Nicholas II.

One of the earliest monumental pieces of work of this genius was in

establishing the fundamental structure of isoprene, that basic hydrocarbon of natural rubber, which is being used to give a synthetic rubber the properties desired.

The results of another gigantic piece of research were given to the world when Ipatieff discovered that by subjecting ethyl alcohol to catalytic treatment, dehydration, dehydrogenation, and polymerization takes place, yielding butadiene. It was upon this work that Russia, under Lebedev's guidance, built up the commercial process for producing butadiene from ethyl alcohol, which was then polymerized to synthetic rubber.

Butadiene is now being produced in Russia at the rate of 100,000 tons per year from ethyl alcohol based upon Ipatieff's reaction. That nation is reported to be the greatest synthetic rubber producing country in the world.

In the U. S. A. synthetic rubber program, ethyl alcohol will be one of the raw materials to produce over one-third of the total of 886,000 tons a year. The ethyl alcohol will be converted into butadiene based upon the Ipatieff synthesis.

Another fundamental discovery of this remarkable man, namely, the production of ethylene by catalytic dehydration of ethyl alcohol, is having a marked effect on synthetic rubber production.

The ethylene produced commercially by this reaction will be used to alkylate benzene with ethylene, forming ethylbenzene. Solid phosphoric acid is used as the catalyst, which was discovered some thirty years after the ethylene reaction. The ethylbenzene is the raw material for the production of styrene. This product when polymerized with butadiene forms the Buna-S type of synthetic rubber, which will be produced at the rate of 705,000 tons a year.

The dehydration of ethyl alcohol to produce ethylene is used in other industries. It is my understanding that ethylene produced as stated is halogenated to ethylene dibromide and chloride for use with tetraethyl lead, an antiknock compound for gasoline.

By using brass as a catalyst Ipatieff discovered that he could produce ketones and aldehydes from alcohols. These products are made commercially in the United States today and are components of materials which are fighting in the ranks to win the victory.

Forty-five years ago our guest of honor studied the rates of combustion of various nitroglycerine explosives at pressures to 4500 atmospheres. Let us not forget that the professor started out as an artilleryman. In that capacity he studied the effects of corrosion and erosion when shells were fired from field artillery. One may state that this type of research was the door which opened the way to the discovery of the field of commercial high pressure chemical reactions, such as hydrogenation and destructive hydrogenation of organic compounds.

One of the greatest results of these studies is apparent today, since they were the basis of the hydrogenation of oil and coal, which process, unfortunately for us, furnishes much of the motor fuel for the German war effort. At least fifty per cent of the aviation gasoline and other motor fuel used by the Germans in carrying on the war is produced by the hydrogenation processes based on the fundamental work of Ipatieff. His discoveries along this line antedated the Germans by about seven years.

Many useful products have been made available as a result of hydrogenation of the aromatic hydrocarbons, phenols and quinolines, in the presence of a catalyst. It is of interest to point out that in the war effort one proposal was to produce ethylene and butadiene from cyclohexane, which resulted from the hydrogenation of benzene for part of the synthetic rubber program. Hydrogenation of sugars to produce alcohols useful in the preparation of medicinals for diabetics is also carried out commercially.

From the high pressure hydrogenation of aromatic and other compounds flowed the converse reaction, or dehydrogenation, which has been applied to many substances.

Under his direction, the catalytic dehydrogenation of butane to the corresponding olefin and diolefin has been carried out, which is of the utmost importance in the production of 100-octane aviation gasoline and synthetic rubber.

Another achievement of the first magnitude was the discovery of a solid phosphoric acid catalyst which polymerized olefins in cracked gases to motor fuel of high octane rating. This same catalyst is used for the production of 100-octane aviation gasoline by selectively polymerizing butylenes to iso-octenes and hydrogenating the latter to iso-octanes.

Prior to this discovery the by-product gases from cracking operations to produce motor fuel were burned under boilers or stills or vented into the air. This simple polymerization process made a revolutionary change in the oil industry.

About one hundred plants were constructed and operated in refining centers all over the world. This process is conserving crude oil at the rate of about sixty million barrels a year, and in addition is producing a motor fuel superior to that derived directly from crude oil. A large number of these polymerization units are now being adapted with small changes to produce 100-octane aviation gasoline components such as aromatics, iso-octane and codimers for our fighting flyers and those of our Allies.

An alkylated product, isopropylbenzene, which produces additional supplies of high speed aviation gasoline, is also the result of the professor's researches in catalysis. The catalyst used in its manufacture is the same solid phosphoric acid.

One of the most intriguing of all chemical reactions is that of isomerization, where the shift in the carbon-to-carbon-to-hydrogen linkage in the molecule profoundly affects the properties of the hydrocarbons. He discovered the most favorable conditions and the catalyst best adapted to make the isomerization of normal butane to isobutane commercially successful. At present there are a number of commercial units operating and being installed, based upon his fundamental researches.

Professor Ipatieff, besides writing revolutionary new chapters in the book of chemistry, has disproved some of the long-held beliefs which have been taught year after year to generations of chemical students, i.e., the deadly inertness of paraffins to chemical reaction.

One of the professor's crowning achievements is the alkylation of paraffins with olefins, which the organic chemistry textbooks said was impossible. This "impossible" reaction is now the groundwork for our production of 100-octane fighting aviation gasoline. There are over fifty alkylation units in operation or under construction now, based on this impossible reaction.

This alkylation process of combining an isoparaffin with an olefin furnishes an essential component in every gallon of aviation gasoline

used by the air fighting forces of the United Nations. Because of Ipatieff's discovery and its prompt development into a workable process, our fighting aviators and those of our Allies have a motor fuel which gives them speed and maneuverability superior to that of their enemies.

Professor Julius Stieglitz told me a dozen years ago, when Ipatieff came to the United States, that Universal had acquired the services of a giant in chemistry. Richard Willstätter, Nobel prize winner for his work in chemistry, who died in Switzerland a fugitive from Hitler, stated while in Chicago in 1933, that never in the history of chemistry had a greater man than Ipatieff appeared.

Professor Fritz Haber, another Nobel prize winner, the creator of nitrogen fixation under high pressure, who, having greatly benefited Germany, also died a fugitive from Hitler, concurred in these opinions. In 1927, when the world of science celebrated Professor Ipatieff's 35th Jubilee of Scientific Achievement, Haber sent him the following message:

> "Science is grateful for the researches presented by the Master, and tenders its thanks with the wish that he may continue for a long time to search and to teach with equal vigor."

Great as are the foregoing achievements of Professor Ipatieff, which have added so much to the usefulness of our hydrocarbons, I think the greatest are still to come.

The impact of Professor Ipatieff on other industries has shown itself in causing the development of a new chemical industry, new metallurgy, new instrumentation, and a host of other materials which supply new chemicals and equipment necessary to carry out the processes which this modest man has given as a heritage to us and to generations yet to come.

Professor Ipatieff, great as your past fifty years have been in the chemical profession, in my opinion it is the past twelve years which have brought the crowning achievements of your career up to date.

To you birthdays mean little. You are still young in enthusiasm, activity and achievement. Ipatieff, master chemist and man, we salute you.

Ipatieff, His Influence on World Chemistry

By Frank C. Whitmore

Dean, School of Chemistry and Physics, The Pennsylvania State College.

Dr. Ipatieff in Russia.

IN PREPARING for my present task of this evening I thought back to the first time I ever met the name of our honored guest. That took me back thirty years to the time when I was preparing for my doctoral examinations in chemistry. In those days we had a system of learning the whole of chemistry in preparation for such examinations. We were wise enough to recognize, however, that there might be a few points which we had missed. Consequently, as a factor of safety we made sure to know the names of men who had done work in various fields of the science on which we might be caught without full information. I remember that when the examinations came there was a question on catalysis. I was ready with my face-saving answer.

The books I had used spelled the name I-p-a-t-i-e-w. I am ashamed to say that I learned it as "IPPACHEW". It worked. After telling

what little I knew about catalysis I proudly added that IPATIEW had done an enormous amount of work in this field. In working up my assignment for tonight, I looked over Dr. Ipatieff's list of papers and saw that I was certainly right in my statement of 1912. Thus our guest played his part in getting me by Professors Richards, Kohler, Baxter and Lamb and the rest of the fearsome group which I faced.

There are many things about Dr. Ipatieff which I might discuss if I allowed myself to roam from my assigned subject. I might talk about his military career which ranged from his graduation as a Lieutenant from the Artillery Academy when he was just under twenty through his rise to become a Lieutenant General just before he was fifty. You might expect that such a career would have caused him to cease to be a chemist but not Ipatieff. Each year he became more and more a chemist. This was fortunate for Russia and fortunate for us all because he did much to lay the foundation for modern chemical science in Russia. Not only that but he applied chemistry in a very practical way to all phases of the First World War as far as Russia was involved. Moreover, he laid the foundation for the later development of industry in Russia which now makes it possible for her not only to hold out against fearful odds and save herself and us but to start the turn of the tide this year.

I might try to abstract for you Dr. Ipatieff's scientific papers but even I have more sense than that because there are hundreds of them. When I say hundreds I am not exaggerating—actually there are just over three hundred. I might tell you about his honors, his degrees, his medals and his prizes but I cannot do that because there are dozens of them. Again, I am speaking literally. When I planned such a statement I had a moment of fear that these honors might prove to be only twenty-three in number and therefore not suitable for counting by dozens. Actually, there are thirty-six of them. Thus when I say dozens, I mean dozens of such honors including a unique combination of membership in the Russian National Academy of Sciences and our own National Academy of Sciences here in America. He is the only man who has ever held both these honors. He also holds a doctor's degree from my Alma Mater, Northwestern University. If anyone bothered to check up, he would find that I hold no degree from Northwestern University. Nevertheless, I say *Alma Mater*. You will guess that I am thinking of the ten very critical years of my life when the University

sheltered and fostered me. Ipatieff also holds our own Willard Gibbs Medal.

I would say that Russia has produced three outstanding chemists among its many great ones. These are Lomonosoff, Mendeleeff and Ipatieff. No doubt some of you have forgotten Lomonosoff. About 1750 he worked out in the then other-world of Russia the chemical principles of oxidation and related processes for which Lavoisier independently became famous a quarter of a century later. The only trouble with Lomonosoff's influence on world chemistry was that his work was not discovered and recognized by the rest of the world until after 1900. Mendeleeff, you remember, discovered the periodic relationship of the elements, a discovery which did much to organize and clarify existing chemical knowledge and point the way to new knowledge.

We can now turn to the third of the towering Russian chemists. Although it is perhaps not yet recognized, Ipatieff has had a far greater influence on world chemistry than his two famous countrymen. This is partly because he has worked in that most creative branch of the science, organic chemistry, but mainly because he is Ipatieff, a chemist who was a pioneer fifty years ago and is still pioneering.

Probably few of you realize that Dr. Ipatieff did not start out as an organic chemist. His first paper was on certain characteristics of steel for use in artillery. In other words he started as a cross between a metallurgist and an inorganic chemist. As one goes over the rise of great organic chemists, it is astonishing how many of them started in other lines of work. Ipatieff soon felt the fascination of organic chemistry and turned to the field to which he is devoting his life.

If, five years ago, I had said the word butadiene to a mixed group like this only at least half would have looked either bewildered or doubtful as to why I should drag in that particular unsaturated compound. Tonight, there is nobody in the room who does not know that butadiene is one of the chief building blocks for *synthetic* rubber. Well, Ipatieff gilded the lily, as you might say, by studying not only isoprene and butadiene but by developing a process for making the latter substance in a single catalytic step from ordinary grain alcohol. Of course you recall that the only successful competitor in the preparation of butadiene from the petroleum cracking industry is this very preparation from ethyl alcohol.

Ipatieff also tried to make isoprene but less successfully as far as his

immediate objective was concerned. He tried to make it by heating amyl alcohol from fermentation fusel oil. Many chemists would have accepted the failure to get the desired product but not Ipatieff. He investigated the material which he obtained even though it was not the desired isoprene. Many would have accepted the result as hard luck and merely changed the conditions in an effort to achieve the original goal, namely, isoprene, but Ipatieff, as always, wanted knowledge before all else. So he took his unwanted product and found that it was an aldehyde, a product of the *dehydrogenation* of the amyl alcohol. Ipatieff recognized that he had found something new under the sun—a process which has since been applied far and wide in organic chemistry both theoretical and industrial. This recognition of a new general process is characteristic of a great scientist. He not only recognized his discovery but wondered about it—another good sign. Why had he obtained this peculiar result when earlier workers had not found it? He finally showed that the difference in results was due to the fact that his predecessors had used a glass tube while he used an iron tube. He again recognized the general principle. The iron tube had acted as a *catalyst*. This led him to his fifty years of work on catalysis which is undoubtedly the most important single feature of modern organic chemistry. You might say that all of this was accidental but please note the sequence of events. He was trying to do one thing—another thing happened—he observed it—he wondered about it—he worked out the answer. Thus was born an entirely new field of science.

Five years ago in speaking of his own work, Ipatieff summarized it in the form of a chemical tree having roots, trunk and branches. Please note that now, five years later, the branches are still spreading. He characterized the roots as three in number, dehydrogenation, *dehydration* and a combination of these two processes. Dehydration, a removal of both hydrogen and oxygen in the form of water, was an old process when Ipatieff appeared on the scene. On the other hand, he rendered it a new process by his application to it of catalysis. Out of these three roots grew not only the trunk of Ipatieff's chemical tree but a large portion of the organic chemistry of the Twentieth Century. I wish I had time to give you even a few out of the thousands of applications of these fundamental processes.

You will see that very early in his chemical career Ipatieff became

interested in the relation of organic compounds to hydrogen. Sometimes it is desirable to remove hydrogen from such compounds and at other times the aim is to add hydrogen. During his early work on the latter process, Ipatieff recognized that he was under a serious handicap in working with such a light material as hydrogen. He decided that the logical thing to do was to compress the hydrogen and thereby make available a larger amount of material in a given space. The only trouble was that there was no equipment for such *pressure reactions*. The difficulties involved were tremendous but remember that Ipatieff had been trained in the Artillery Academy and was teaching there. He was interested in guns and knew about them and the high pressures involved in their operation. In 1903 he developed the first practical experimental bomb for working at high pressures. When you think of a bomb you think of something which blows up. Well, the *Ipatieff bomb* quite properly refused to blow up in spite of high pressures used. It did its job of forcing hydrogen into organic compounds which would not ordinarily take hydrogen. In about one hundred scientific papers Ipatieff has covered the hydrogenation of organic and inorganic materials in the gas phase, the liquid phase, the solid phase and in solution. Meanwhile other chemists have published thousands of such papers. I cannot resist the temptation of reminding you that the hydrogenation of oils is of the greatest practical importance. Useless and even objectionable fish oils can be hydrogenated to materials from which we obtain soap, special lubricants, glycerol for explosives and the like. The hydrogenation of coal to form liquid fuels is another direct outgrowth of Ipatieff's work on *high pressure catalytic hydrogenation*.

About 1910 Ipatieff made what he believes to be his greatest discovery or invention. He discovered *promoters*. You recall that catalysts are mysterious materials which by their mere presence will speed up a process without being consumed themselves. Ipatieff discovered that many of these catalysts work even more effectively if to them are added minute quantities of other materials such as the oxides of various metals. Thus he added mystery to mystery but in a very practical way.

As the years went on Ipatieff applied his favorite processes, his catalysts, and his promoters more and more to the field of petroleum. He thus become interested in *polymerization*, the changing of gases which are too volatile for motor fuels into liquids which can be so used. He worked on *alkylation*, a series of processes for changing a straight chain

badly knocking gasoline into a high octane fuel. He next turned his interest to *isomerization*, which is another way of changing the straight chain into branched chains of carbon atoms, of changing poor fuels into high grade fuels. His catalysts and promoters also proved important in *cyclization*, the tying of straight chain hydrocarbons into cyclic or ring hydrocarbons, again, to produce better fuels.

Of course, the great triumph of modern internal combustion engines has been due to the work of thousands of different scientists and engineers. However, if one had to pick out one lone man who is more responsible than any other for our high octane aviation gasoline, one of our most important weapons of defense and offense, that one man is Ipatieff.

Here in America we have built up a great body of organic chemistry and technology in the field of open chain compounds which we proudly place beside the old organic chemistry which started from coal tar and involved mainly cyclic compounds. The latter developed by the great German chemistry professors and technologists before 1900. Theirs was aromatic chemistry, ours is aliphatic chemistry. We have thought of it as purely American because it was developed almost entirely in this country. In that there was only one flaw—much of it depends on dehydrogenation, hydrogenation, polymerization, catalysis and promoters —in other words on the work of a great Russian chemist. For twelve years now that great Russian has been in America. Now he is an American and we can truly say that the field of industrial aliphatic chemistry is really an American development from start to finish. Dr. Ipatieff, we salute you.

Left to Right: J. G. Alther, H. J. Halle, Gustav Egloff, Frank C. Whitmore, Vanderveer Voorhees, V. N. Ipatieff, Mrs. Ipatieff, Ward V. Evans.

Vladimir N. Ipatieff

***By* Professor Ward V. Evans**

Northwestern University

IN LOOKING backward over the past twelve years, I find that it has been my privilege to have had considerable to do with the guest of honor this evening, Professor Ipatieff.

In July, 1931, Dr. Egloff called at my home, and he had with him a tall, dark, distinguished looking man that he introduced as Dr. Ipatieff. Now, fortunately, I had heard of a Russian chemist called Ipatieff, who had done a great deal of work on high pressure catalysis. In my ignorance, I imagined that the Ipatieff whose work was familiar to all chemists had been dead many years, and so I said to Dr. Egloff, "But surely this is not Ipatieff". Egloff bowed not too gracefully, and said, "Yes, this is the great Ipatieff".

Because of that visit I was instrumental in having Northwestern University take him on their staff. This was not an easy task, for Ipatieff was just an unknown Russian as far as the president and Board of Trustees was concerned. But I accomplished my task, and when I cash in, and they see fit to enumerate the little things I have been able to do, I hope they say, "He brought Ipatieff to Northwestern University." This will be glory enough for me.

Then, again, when he was made a citizen of the United States, I was privileged to be called in. Ipatieff was a little afraid on this occasion that I might not be able to answer all the questions that would be asked me. He said, "How can you say that you have seen me every day during the past years?" I told him that if he took care of his end of the affair, I would take care of mine, and added that I knew how to handle clerks in Naturalization offices.

I told the clerk that it was a great privilege the Chicago office had bestowed upon them when they were ever asked to make a citizen out of one of the world's greatest chemists. The clerk beamed, and said he realized this was a rare privilege, and he left the little room where he was questioning me to go out and take another look at Ipatieff, and when he came back he was so satisfied with the job he was doing that he forgot the list of questions I was supposed to answer. I listened

when he questioned Dr. Ipatieff. It was his task to discover if Ipatieff had sufficient knowledge and character to become a citizen. He asked him, "Who is president of the United States", and a few similar questions. Then came the question, "Do you go to church?" Dr. Ipatieff answered, "Yes". Then the catch question, "What church do you attend?" Ipatieff answered, "Any church, this is a free country". There were no more questions after that, and I would have scored Ipatieff 100.

Then again, it was my privilege to read his citation when Northwestern University gave him an Honorary Degree in 1938. Citations are disagreeable things as a rule, hard to write and hard to read. But this case was different. I was limited to a certain number of words, and I could not say one-tenth of the things I wanted to say about this man.

Again, on the occasion of his 70th birthday, I wrote an article for the Bulletin, and later I wrote a short biography of him for the News Edition of the American Chemical Society. And tonight, I am helping to celebrate his 75th birthday, and my work is not nearly completed. I expect to help him celebrate many more birthdays.

The life of Dr. Ipatieff reads like a tale from the Arabian Nights. I shall not enumerate his early struggles, or his rise to fame and fortune. At the age of 64, he was possessed of most of the honors the scientific world could bestow upon him. He was internationally known as one of the world's greatest chemists. The author of more than 200 papers and a number of books, and a teacher of great renown, he was beloved and honored by his own people. His researches were the property of the scientific world. Prosperity had followed his achievements, so that he was surrounded by every material comfort. His personal life was enriched by a circle of lively, cultivated friends, aristocrats and intellectuals alike being drawn to this affable man and his charming wife.

And finally, in fortune's crowning gift to an old distinguished family, he had three sons and a daughter. The social, military and economic position of Ipatieff was such that he could afford to send his children to the most exclusive private schools of Russia, which were attended only by Russian aristocracy and nobility. Instead of this, Ipatieff and his wife sent their children to public schools attended by the sons and

daughters of the rank and file. They did this because they believed in democracy. Friends and associates of aristocracy, they in their own life practiced the principles of democracy.

The eldest son was an outstanding student at St. Petersburg when the World War came, and was called to the colors as an officer. Then came disaster. The eldest son was killed in action. Revolution followed the war. His sovereign was assassinated in Ipatieff's brother's castle. A new political order came in force with strange regimentation that was stifling to creative genius. Ipatieff, although not in agreement with the teachings of the Bolsheviks, any more than he had been in agreement with the teachings of the Czar, nevertheless between 1921 and 1923, was a member of the Russian Government. He was always glad to help mother Russia and her people, regardless of who was head of the government.

During this period he was chairman of all the scientific and technical institutions of Russia. Between 1928 and 1930, he commuted between Russia and Germany. But his research work was being stifled, and in 1931 he and his wife, Barbara Demitrivena, succeeded in leaving Russia permanently. After a short stay in Germany they came to the United States.

I am sorry I can't say that Dr. Ipatieff appeared in the United States in poverty—it would make a better story. But I must tell the truth. He stopped in Germany several months, just long enough to make $45,000. How much of it he brought with him, I do not know, but he was quite sure he and his wife could eat regularly anyway.

In this new land, not very understanding in its sympathy for White Russians, and speaking a language entirely strange, Ipatieff at the age of 64 started to build again. But to his new home no immigrant boy with all his life before him, with body buoyant, elastic and strong, with ideals yet to be realized and hopes untarnished has ever brought keener vision nor more energy to work. From the wreckage of the old order this Russian immigrant brought two priceless treasures. The ability and the desire to search for truth.

Twelve years have passed since his admission to this country. We find him today hale and hearty, at work in the laboratory, and too busy to take time out for lunch. He has directed a prodigious amount of

research, published more than 60 articles, and taken out more than 80 patents, and also one hundred foreign patents. He has published two books in English. The days are not long enough, nor human assistance adequate to follow all the creative impulses of his active mind.

The National Academy of Sciences of America was proud to elect him to membership, and the Chicago Section of the American Chemical Society to present him with its Willard Gibbs Medal in 1940. Such recognition allays somewhat the heartache in news from Russia. Upon his refusal of Soviet orders to return, his scientific honors there were revoked; his membership in scientific societies cancelled. After all, however, this is of little moment. Mother Russia had done her part when she produced an Ipatieff. And what a ruler can do in revoking a deserved honor is a farce of first magnitude.

Personal sorrows have also followed him. His second son, with a scientific career before him, lost his life in the Belgian Congo while fighting tropical fevers. His youngest son, now honored in Russia, was cut off from communication with his father. Only his urge for work, his warm interest in the people about him, his philosophy and his sense of humor have made it possible for him to go through the difficult days and still carry on.

In his Chicago apartment one evening, shortly after his arrival, hospitality and refreshment were being dispensed with all the warmth and color of traditional Russia. We American guests spoke to our hosts in either French or German, then turned to interpret their replies to each other in English, while the Ipatieffs and their Russian friends commented to each other in their language, or ventured broken English. With a comic gesture of exasperation, Dr. Ipatieff exclaimed: "Bad English, bad German, bad French! Only Russian is good". Then, bringing a fresh bottle from the buffet, "If plenty of wine, what matters the language?"

Seeing him so—gay, cosmopolitan, bon vivant—one found it hard to identify him with the intensive research director or the doting grandfather who eagerly showed pictures of the children in Russia, or quoted the rare letters that came through.

For his adopted country he has acquired great devotion. His interest in chemical research may be seen by the fact that he has donated $26,000 for a research laboratory at Northwestern University where important work is already in progress under his direction. He has

also established a trust fund of $35,000, the interest from which after his death will be used for prizes in chemistry, to be awarded under jurisdiction of the American Chemical Society to students in chemistry in any country, irrespective of creed or race.

Occasionally a great research worker is born. Occasionally the world produces a great teacher. Occasionally a great humanitarian appears in the race. When these great and rare personalities are embodied in a single individual, it is time to consult the Law of Probabilities. If, to this unusual combination is added yet another characteristic, the ability to endure unheard-of hardship and suffering and to rise above it, with head unbowed, eyes bright, to carry out at 75 some of the greatest researches of a lifetime, you have an idea of the man you meet in this Russian scientist, now a naturalized citizen of the United States, Vladimir N. Ipatieff.

NATIONAL ACADEMY OF SCIENCES

WASHINGTON, D. C.
November 19, 1942

My dear Doctor Ipatieff:

At the recent autumn meeting of the National Academy of Sciences, I was requested to convey to you the following message:

"The National Academy of Sciences, at its autumn meeting in Washington, October 26, 1942, unanimously adopted a motion to convey to you upon your seventy-fifth birthday their greetings and congratulations, and to express the hope that you may be spared for many years to come, in health and happiness, to enjoy the fruits of your distinguished scientific accomplishments and to contribute still further to the development of chemical industry in the service of mankind."

In transmitting this greeting to you, allow me to extend my own congratulations.

Sincerely,

MARSTON T. BOGERT

Dr. V. N. Ipatieff
Universal Oil Products Company
Riverside, Illinois.

My Twelve Years in the U. S. A.

Address delivered by V. N. Ipatieff at the Meeting of The American Institute of Chemists — November 20, 1942.

Director of Chemical Research, Universal Oil Products Company, Chicago, Illinois

ALLOW me to thank you for your very kind reception tonight and for your flattering estimation of my work. My wife and I have been deeply touched by your cordiality and consideration.

This year, as you know, commemorates not only my seventy-fifth birthday, my wife's and my golden wedding anniversary, and the fiftieth year of my scientific work, but also my twelfth year in the United States, and it is of my recollections and impressions of these last twelve years that I wish to speak tonight.

When on a summer's day, twelve years ago, I met Dr. Egloff at the Power Congress in Berlin, I did not suspect that the event would change the whole course of my life. Now that I know Dr. Egloff a little better, I am prepared to expect almost anything. At that time, however, I was still capable of being surprised to find myself about to disembark at New York several weeks later, a little bewildered by the amazing rapidity with which Egloff had invited me to visit his firm, arranged for my visa, and set me sailing.

I cannot say that my first experience in America was pleasant. Because I was from the USSR and therefore, in the eyes of the immigration officials, a Communist, I was held for a two-hour questioning. What puzzled them most was how I, a Russian citizen of good standing, was able to have several thousand dollars in an American bank, because they knew that no honest man in Russia had any money. Fortunately, I was able to convince them that I had earned the money honestly by working abroad in Germany with special permission of the Russian Government. Finally, after many consultations with several higher officials, the immigration authorities let me go, not without some suspicion, however, and with several stern looks as if to remind me that I should behave myself while here and not try any communist tricks.

It was with a sigh of relief that I finally set foot in New York proper and hired a taxi to take me to the Chemists' Club on 41st Street which Dr. Egloff had recommended to me as the best place to stay. As I travelled through those streets so strange and wonderful to a foreigner, I marveled at the skyscrapers on either side and hoped that the hotel to which I was going was a tall one and that I would get a room on the 54th floor or the 75th. After all, if one has never seen anything higher than a ten story building, one may as well go the limit. The taxi stopped in front of a tall building—not exactly 75 stories, but at least 30—and I stepped into my first American hotel. What I saw made me stand in the lobby with my mouth open. Men were walking about on scaffolding piled under the ceiling; the floor was littered with buckets of paint, ladders, clumps of covered furniture, and broken plaster, and the place reeked with turpentine. With hundreds of hotels in New York, I had to draw the one which was being redecorated. However, despite this inconvenience, I found my room on the fifteenth floor to be a refreshing change from the living accommodations of Russia.

My work at UOP began when Mr. Halle, the president of UOP, and Mr. Alther, Vice-president, asked me to organize the experimental laboratory at Riverside for the study of catalytic problems in the petroleum industry. Industrially, catalysis was a virgin field, and I felt that much could be accomplished here. The chemists knew little about catalysis, but they took to this new work with such enthusiasm that they quickly became adept and lost their initial awkwardness.

UOP was at that time mainly interested in desulfurization, but I felt that the application of catalysis had far greater possibilities in other directions, and I was especially interested in the problem of converting the vast quantities of waste gases formed by the cracking process into something useful. Since UOP did not have any objections to my studying this problem, I assigned one of my assistants, Dr. Pines, to do the special investigating. I selected him because he seemed capable, and because I was told that he spoke French. For almost a whole year he and I struggled along in the French language—struggled because neither he nor I knew it any too well—until one day one of my assistants informed me that Pines had been born and raised in Russia and spoke that language much better than he did French. Pines, it seems, had thought that I wanted to keep my French in condition. However,

even in French, the results of our work showed so much promise that the laboratory soon began to turn its main attention to the problems of polymerization and alkylation.

I suppose any American is interested in the impressions his strange and wonderful country produces on the average European. Probably its most striking features are its individuality and its extravagance as compared with the European conception of things. If the most highly cultured European country has two or three universities, the United States has a hundred; if a million dollars spent for scientific research is considered a large sum of money in Europe, a hundred million is not considered as anything unusual here; and similarly in everything else. The high standards of living which are taken so much for granted here, are unknown even to wealthy people in Europe.

A newly arrived visitor finds very strange the simple and democratic relations among the people, and it is sometime before he can become accustomed to the familiarity with which strangers treat each other.

I remember one incident which occurred a number of years ago. I was looking for a book in the library of the American Chemical Society in New York when a stranger, who saw that I was a foreigner, walked up to me and, without introducing himself, asked me who I was. I told him. He couldn't recognize in my pronunciation of my name anything that was familiar to him, but he had me repeat it several times just to be sure that he caught the right name.

"Oh!" he finally exclaimed, "are you the Ipatieff who first introduced high pressure?"

I admitted that I was.

"Are you the same man who works with catalysts?" he continued.

"I am," I replied.

"And did you precipitate metals from their salt solutions?"

"I did."

"Oh, then I am very happy to meet you," he said, shaking my hand, and without more ado, he turned around and walked away, leaving me standing with my hand still in the air.

On another occasion, I was showing a visitor through our laboratory at Riverside. He became very interested in our high pressure apparatus and asked innumerable questions. When he was leaving, I asked him,

out of curiosity, whether he had ever heard of my work before. He gave me a terrific slap on my stomach which left me gasping, and said, "Every dog knows you."

In general, however, I must say that the good-will and the unpretentiousness of the American people have impressed me very much.

Of all American customs, the one at which I wonder most and which has caused me no little distress, is that of pulling teeth. Whereas a European dentist will give many hours of serious consideration to the question of whether to pull or treat a single tooth, here there isn't even a question—the dentist simply pulls it. Moreover, if some other member of the body is suffering, a doctor will first ask his patient to remove some of his teeth before he will undertake to treat him.

When I first walked into my dentist's office here, I could see by the happy look on his face that things wouldn't go so well for me. Even as I was walking through the door, he had decided that I had too many teeth for my own good. As soon as he had me helpless in the chair, he began to tell me of all the horrible things that might happen to me with so many teeth in my mouth, and before I left, I had weakly promised to let him separate me from seven or eight. Because he was afraid I would change my mind, he insisted that the operation be performed in the next few days and I had no resistance left to refuse. All this occurred just before I went to Canada to get a professor's visa. For three days I couldn't eat a thing and could hardly speak. The climax came on the third day when I was invited to a dinner at which was served a most excellent steak: I can still smell it. I was so hungry by then that I could have eaten it with my eyes, but I had to push it aside and explain to my hostess that I had just eaten a big dinner and couldn't eat another. Throughout the remainder of the meal I entertained myself with pleasant thoughts of my dentist to keep the odors of the steak under my nose and the healthy appetites of the other guests from driving me to distraction.

Probably the most memorable instance of my twelve years here was the time the polymerization process was ready to be tried on a large scale in the pilot plant. The test was a crucial one because its success depended on my phosphoric acid catalyst which few of my assistants believed was suitable for this reaction. I was told the unpleasant news a few days later—the reaction had gone smoothly the first two or three days and then the catalyst formed a solid lump and blocked the passage

of gas. Again the experiment was performed, and again the same thing happened. My catalyst was a failure. I could see that my assistants, although sympathizing with me, for they knew what a bitter disappointment it was to me, nevertheless felt a certain pride in that they had predicted correctly that my phosphoric acid catalyst would not work.

This recalled to me an incident in the life of Suvorov, the great Russian general of the 18th century. The French were attacking his troops in great number at the battle of the river Trebia in Italy in 1798, with such force that several times the Russian lines almost cracked. His generals sent word that they wanted to retreat and asked him to give the order since the French might break through at any moment. Their requests produced no results and finally the generals came themselves. Suvorov, who was sitting beside a huge rock, turned to them calmly,

"You see this rock?" he said. "Can you move it? Neither can you move me. Our forces will not retreat."

The battle was a bloody one, but Suvorov came out victorious.

I also decided not to give way to the scepticism of my friends. They had been wrong too often and were a bit obtuse anyway, catalytically speaking. I remembered how long it took some of them to believe, despite my incontestable data, that I had actually united paraffins with olefins when I discovered the alkylation reaction. Therefore, I rallied my forces and set to work to find what caused my catalyst to behave in the pilot plant as it had never behaved in the laboratory. It took several weeks of work, but we finally learned that the fault did not lie in the catalyst, but in some air leaks in the system. After these had been plugged up, the reaction went as smoothly as could be desired. Today, this process using the same phosphoric acid catalyst, is producing tens of thousands of barrels of high octane gasoline a day.

The results of our work at Riverside could not help but attract the attention of the Russian Government. After making a number of unsuccessful attempts to lure me back to Russia, it was finally announced that unless I returned I would lose my citizenship. Shortly after that, I read in the papers that I had been expelled from the Russian Academy of Sciences and that I had lost my citizenship and would never again be permitted to set foot on Russian soil. I also read that my son had

publicly denounced me because I did not want to work in the USSR and was, therefore, an enemy of the proletariat. What impressed me most was that of the hundred odd members of the Academy, only sixty-two came to vote, and six of these dared to show their disapproval by not voting.

I have often been asked how my son could renounce me. I can only reply that it is necessary to know the conditions of life in the USSR as they existed to understand that he had no choice. Even Peter renounced Christ though he was Christ's favorite pupil.

It was on the occasion of my seventieth birthday that I received a letter from the Chemistry Department of Northwestern University signed by Dr. Evans giving me the opportunity I had long awaited. Let me quote a short paragraph from it.

"If the time ever comes when you retire from your industrial connection and if you wish in your retiring years to still continue to work in your chosen field, Northwestern University would consider it a rare privilege to have you working in our laboratories with some research students as a Research Professor."

I did not waste any time taking advantage of their offer and it is now five years that my laboratory of high pressures which is now in the new Technological Institute at Northwestern University has been functioning. I am deeply indebted to UOP for its material help in equipping the laboratory with the latest type apparatus for work in catalysis and high pressures and to Mr. Halle, the Victor Company, and the Standard Oil Company of New Jersey for the contributions to my fund for the laboratory.

I am deeply grateful to the University which had set aside and equipped for me a large laboratory, a fine office, and a separate room for my own experimental work in the new Institute. The time I spend there, where in complete quiet I can work on new problems, recalls to me my youth and makes me temporarily forget all my troubles and sadness.

I have lived a long and busy life; I have had contact with a very large number of people of all types and all occupations; I have lived through several wars and revolutions, and I cannot say that fate has been unkind to me. I am happy that in my later years, despite the troublesome times through which I have lived, I have kept my love for

my chosen science, and that I still retain my physical strength. And I am most happy that I can spend these later years in this wonderful country where I have found so many talented assistants and friends.

I have felt that I would be in a sense shirking an obligation if I did not try to write the recollections of my life and shed some light upon those periods during which I carried the load of both scientific and governmental duties. Although I have never considered myself a writer, I have attempted this task and during the last six years have written the memoirs of my chemical and military career. These memoirs are dedicated to the "Unknown Chemist" and will be published by the Stanford University Press.

Of all the compliments I have ever received none pleased me as much as the one my friend Professor Adkins made in answer to my letter of congratulations on his being elected to the National Academy of Sciences. He wrote,

"There is no chemist in the world today who has been so productive over so long a period of time as yourself. Neither time nor place nor political nor economic conditions has stopped the flow of your creative and fruitful work in chemistry."

My only wish is that this good fortune will remain with me to the end of my scientific life.

Messages of Congratulation

The jubilee dinner given in honor of Professor and Mrs. Ipatieff brought felicitations from many leaders in the world of science and education in this country and abroad. Among those who sent messages of congratulation are:

Mr. Daniel Pyzel, of Shell Union Oil Corp., and Mrs. Pyzel.
Paul Kolachov, Director, Research and Development, Joseph E. Seagram & Sons, Inc.
Dr. Alexander Silverman, Head, Dept. of Chemistry, University of Pittsburgh.
Dr. Townes R. Leigh, Dean, University of Florida.
Dr. George Granger Brown, Dept. of Chemistry, University of Michigan.
Dr. T. G. Delbridge, Manager, Research & Development Dept., The Atlantic Refining Company.
Dr. Hans Z. Lecher, Calco Chemical Division, American Cyanamid Company.
Dr. E. H. Volwiler, Vice-President, Abbott Laboratories.
Dr. B. B. Freud, Colonel, C.W.S., Acting Regional Director, Sixth Civilian Defense Region, Chicago.

Charles M. Thomas, Bacon & Thomas, Washington, D. C.
Dr. V. R. Edman, President, Wheaton College.
Dr. Cecil E. Boord, Dr. Albert L. Henne, for the staff of A. P. I. Hydrocarbon Research Project.
Victory Prock, Former Student of Constantine Artillery School.
Icie Macy-Hoobler, Director, Research Laboratory, Children's Fund of Michigan, Detroit.
Frank O. Lundstrom, The American Institute of Chemists, Washington, D. C. Chapter.
Dr. Roger Adams, the William Albert Noyes Laboratory, University of Illinois.
Dr. E. R. Weidlein, Director, Mellon Institute of Industrial Research, University of Pittsburgh.
Dr. S. C. Lind, Dean, University of Minnesota, Institute of Technology.
Dr. E. A. Doisy, School of Medicine, St. Louis, Missouri.
Dr. John Xan, Chemistry Department, Howard College, Birmingham, Alabama.
Schwarz Laboratories, Inc., New York.
Dr. Charles A. Kraus, Brown University, Providence, Rhode Island.
Dr. Marston T. Bogert, President, International Union of Chemistry, New York—Also Dept. of Chemistry, Columbia University.
National Academy of Sciences, Washington, D. C.
Dr. T. N. Mehta, University of Bombay, India.
Vitaly Petrop, President, The Russian Children's Welfare Society, New York.
Valentine Vassilieff (President) Society of Friends of Russian Culture, N. Y.
L. A. Mekler, Office of Petroleum Coordinator for War.
Howard S. Neiman, Secretary, American Institute of Chemists, New York.
Dr. E. Berl, Carnegie Institute of Technology.
Dr. William Lloyd Evans, Ohio State University.
Frank Howard, Standard Oil Development Co.
E. W. Isom, Vice-President, Sinclair Refining Co., New York.
James J. Doheny, Company A, Regiment of Cadets, Edgewood Arsenal, Edgewood, Maryland.
Dr. W. A. Noyes, Jr., Dept. of Chemistry, University of Rochester—Also Editor "Chemical Reviews".
Dr. Kasimir Fajans, University of Michigan.
Dr. F. A. Gilfillan, Oregon State College.
Dr. Arthur B. Lamb, Dept. of Chemistry, Harvard University.
Dr. J. C. Warner, Chairman, Pittsburgh Section, American Chemical Society.
Dr. R. Norris Shreve, Professor of Chemical Engineering, Purdue University.
R. E. Burk, The Standard Oil Company, Cleveland.
Arch L. Foster, Associate Editor, The Oil and Gas Journal.
Sociedad Colombiana de Quimicos Ancizar, Bogota, Colombia.
Nabuco Araujo Jr. C.E. and Associacao Quimica Brasil.
P. C. Lauinger, President, The Oil and Gas Journal.
E. W. Mayo, Editor, World Petroleum.
Grady Triplett, Editor, Petroleum Refiner.
Virgil B. Guthrie, Managing Editor, National Petroleum News.
Dr. P. K. Frolich, Director, Chemical Division, Esso Laboratories, Standard Oil Development Co.

Dr. R. R. Williams, Bell Telephone Laboratories, New York.
Professor Harold Weber, Massachusetts Institute of Technology.
Dr. E. J. Crane, Editor, "Chemical Abstracts".
William F. Hall, Spear, Donaldson & Hall.
Dr. Robert Maynard Hutchins, President, University of Chicago.
Dr. Claude S. Hudson, Professor of Chemistry, U. S. Public Health Service, National Institute of Health.
Dr. Vincent du Vigneaud, Professor of Biochemistry, Cornell University.
Dr. Charles L. Parsons, Secretary, American Chemical Society, Washington, D. C.
Dr. R. C. Newton, Vice-President, Swift & Company.
Dr. Harrison Hale, Dept. of Chemistry, University of Arkansas.
Dr. W. R. Whitney, Honorary Vice-President, General Electric Company.
Dr. William D. Coolidge, Vice-President and Director of Research, General Electric Company.
Professor P. H. Emmett, Dept. of Chemical and Gas Engineering, The Johns Hopkins University.
Harvey F. Mack, President, Mack Printing Company.
Eugene J. Houdry, Houdry Process Company.
Dr. K. G. Mackenzie, The Texas Company, New York.
A. Cressy Morrison, Consulting Engineer, New York.
Dr. H. T. Herrick, Director, Northern Regional Research Laboratory, Peoria.
Dr. R. P. Russell, Standard Oil Development Co., New York.
E. S. Stateler, Editorial Representative, Chemical & Metallurgical Engineering, Chicago.
Rex W. Wadman, Publisher, World Petroleum, New York.
William T. Ziegenhain, The Oil and Gas Journal.
C. O. Willson, The Oil and Gas Journal.
Thomas R. Furlong, Financial Editor, The Chicago Tribune.
Dr. Lincoln T. Work, Director of Research and Development, Metal & Thermit Corporation.
Dr. F. A. Rohrs, Major C.W.S., Fort Sam Houston, Texas.
Dr. Charles Allen Thomas, Director of Research, Monsanto Chemical Company, Chicago.
Dr. Alden H. Emery, Asst. Manager, American Chemical Society, Washington, D. C.
Dr. Henry T. Heald, President, Illinois Institute of Technology.
Dr. Harold C. Urey, Nobel Prize Winner and Professor at Columbia University.
Elbert C. Lathrop, Chief, Agricultural Residues Division, U. S. Dept. of Agriculture, Peoria, Ill.
R. Van Der Woude, President, Shell Union Oil Company, New York.
Dr. Franklyn Snyder, President, Northwestern University.
Dr. R. L. Shriner, Dept. of Chemistry, Indiana University.
Dr. K. M. Watson, College of Engineering, University of Wisconsin.
C. S. Snodgrass, Associate Director, Foreign Division, Office of Petroleum Coordinator for War.

S. D. Kirkpatrick, Editor, Chemical and Metallurgical Engineering, and President, American Institute of Chemical Engineers.
Dr. M. Gomberg, Professor of Chemistry, University of Michigan.
Dr. A. B. Garrett, The Ohio State University (Chairman, Columbus Section, A. C. S.).
Dr. J. Bennett Hill, Manager, Development Division, Sun Oil Company.
John F. Normano, The Russian Economic Institute, New York.
Dr. Harrison E. Howe, Editor, Industrial and Engineering Chemistry.
Dr. Ernst Bergmann, University of Rehovah, Palestine.
Dr. Homer Adkins, University of Wisconsin.
Dr. Carl S. Marvel, University of Illinois.
Dr. Albert E. Miller, Technologist, Sinclair Refining Co., New York.
Professor Dr. S. Comarossky and Students, University of Mexico.
V. A. Grodsky, A. I. Krynitsky, V. A. Nekrassoff, Former Students of Professor Ipatieff.
Vladimir K. Zworykin, Associate Director of Research, Radio Corporation of America.
Boris N. Lougovoy, Former Student of Professor Ipatieff.
Stephen P. Timoshenko, Former Student of Professor Ipatieff.
Sir James Irvine, St. Andrews College, St. Andrews, Scotland.
Dr. Aristid Grosse, Columbia University.
Donald D. Van Slyke, Rockefeller Foundation.
Chaim Weizmann, Head of Zionist Movement in Palestine, and President of University of Palestine.
Dr. Linus Pauling, Gates and Crellin Laboratories of Chemistry, California Institute of Technology.
Dr. H. B. Hass, Head, Dept. of Chemistry, Purdue University.
Dr. Harold Henry Fisher, Hoover Research Institute, Stanford University.
M. Gousev, Amtorg Trading Corporation, New York.
Dr. George Calingaert, Ethyl Corporation, Detroit.
M. H. Bigelow, Plaskon Company, Inc., Toledo.
T. A. Boyd, General Motors Corporation.
Lee J. Gary, Chicago.
June Provines, The Chicago Sun.
Dr. Gerald Wendt, Science Editor, Time Magazine, New York.
Dr. Martin Fischer, Cincinnati College of Medicine.
Dr. James Bryant Conant, President, Harvard University.
Dr. W. E. Bachmann, University of Michigan.
Otto Eisenschiml, Author, President, Scientific Oil Compounding Co., Inc., Chicago.
J. D. Seguy, Universal Oil Products Company.
C. F. H. Allen, Asst. Superintendent in Charge of Synthetic Organic Research Laboratory, Eastman Kodak Company.
Dr. Paul H. Fall, President, Hiram College.
Robert E. Wilson, President, Pan American Petroleum and Transport Co.
Dr. L. H. Adams, Director, Geophysical Laboratory, Carnegie Institution of Washington.

Francis Despard Dodge

THE AMERICAN INSTITUTE OF CHEMISTS deeply regrets to record the death of Francis Despard Dodge on March 15, 1942, from a heart attack. Dr. Dodge was born January 14, 1868 in Washington, D. C. He obtained the Ph.D. degree from Columbia University in 1890 and spent a year at Heidelberg University. From 1891 until the time of his death, he was employed by Dodge & Olcott Company, Bayonne, New Jersey, as chemist, chief chemist, works manager, and research director. He specialized in essential oils and isolates, and aromatic chemicals, and he published numerous papers on the composition and analysis of essential oils. He was a member of the American Pharmaceutical Association, The Chemists' Club (New York), The American Mineralogical Society. He became a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS in 1936.

Henry C. Fuller

It is with deep regret that THE AMERICAN INSTITUTE OF CHEMISTS records the death of Henry C. Fuller on August twenty-sixth.

Mr. Fuller was born in Worcester, Massachusetts, November 13, 1879. He obtained the B.S. degree from Worcester Polytechnic Institute in 1901 and served as chemist for several industrial firms until 1907. From 1907 to 1911, he was with the United States Bureau of Chemistry, following which he became food and drug investigator for the Institute of Industrial Research until 1921. From 1921 until his death, he was a consulting and research chemist in Washington, D. C. He specialized in pharmaceutical chemistry, food technology and analysis, drug plant introduction and propagation, and alkaloids. He was also a student of problems relating to the wine industry in Italy and France.

Mr. Fuller was a member of the American Pharmaceutical Association, the Ornithological Union, the Biological Society of Washington, The Washington Academy of Sciences, The Society of Chemical Industry (London), the American Chemical Society, and the Association of Official Agricultural Chemists. Mr. Fuller became a member of THE AMERICAN INSTITUTE OF CHEMISTS in September, 1936.

COUNCIL

OFFICERS

President, Gustav Egloff
Vice-president, Donald Price
Secretary, Howard S. Neiman
Treasurer, Walter J. Murphy

COUNCILORS

E. R. Allen
Donald H. Andrews
Frank G. Breyer
Stuart R. Brinkley
Harry L. Fisher
Charles N. Frey
Frank O. Lundstrom
Robert J. Moore
Foster D. Snell
W. D. Turner

CHAPTER REPRESENTATIVES

New York	*Niagara*	*Philadelphia*	*Washington*
Marston L. Hamlin	A. W. Burwell	Gilbert E. Seil	Albin H. Warth

---

The minutes of the National Council meeting, held on Friday, December eleventh, will appear in the next available issue of The Chemist.

Applications for Membership

For Fellows

Abernethy, Raymond J.
Chief Chemist, Coroner's Office, Los Angeles County, 101 Hall of Justice, Los Angeles, California.

Beyt, Maurice S.
Research Chemist, Universal Oil Products Company, 310 South Michigan Avenue, Chicago, Illinois.

Coppoc, William J.
Chemist, The Texas Company, Port Arthur, Texas.

Corbin, Milford H.
General Manager, Toch Brothers and Standard Varnish Works, 2600 Richmond Terrace, Staten Island, N. Y.

Gibson, George
Assistant Professor of Chemistry, Illinois Institute of Technology, 3300 Federal Street, Chicago, Illinois.

Lougovoy, Boris N.
Chief Research Chemist, American Chicle Company, 30-30 Thompson Avenue, Long Island City, N. Y.

Luaces, E. L.

Consulting Chemical Engineer and Patent Solicitor, Toulmin Building, Dayton, Ohio.

Tortorici, Peter V.

Materials Inspector, U. S. Maritime Commission, 45 Broadway, New York, N. Y.

To be Raised from Junior to Fellow

Serbiá, Gonzalo R.

Superintendent of Manufacture, Ingenio Cristóbal Colón, San Pedro de Macoris, Dominican Republic.

To be Raised from Student to Associate

Sieminski, Mitchell A.

Assistant Director of Laboratories, Laboratory Division of Warwick Hills, 178 Atlantic Avenue, Boston, Massachusetts.

CHAPTERS

Chicago

Chairman, Vanderveer Voorhees *Vice-chairman,* Hilton I. Jones

Secretary-treasurer, Charles L. Thomas
Universal Oil Products Company
Riverside, Illinois.

The Chicago Chapter gave a dinner to Professor Vladimir N. Ipatieff on November twentieth, on the occasion of his seventy-fifth birthday. The papers presented appear elsewhere in this issue of THE CHEMIST.

New York

Chairman, Elmore H. Northey *Vice-chairman,* Paul J. Witte

Secretary-treasurer, A. Lloyd Taylor
Oakite Products Company, 22 Thames Street
New York, N. Y.

Council Representative, Marston L. Hamlin

A meeting of the New York Chapter will be held December eighteenth at The Chemists' Club.

Dr. Ralph H. Ball, Chief of the Thermoplastics Unit War Production Board, Washington, D. C., will speak on "Raw Material Supplies for Plastics Manufacture."

Niagara

Chairman, L. M. Lawton *Vice-Chairman,* George W. Fiero

Secretary, Margaret C. Swisher

Department of Chemistry
University of Buffalo
Buffalo, New York

Council Representative, Arthur W. Burwell
Carl H. Rasch, *Alternate*

Pennsylvania

Chairman, J. M. McIlvain *Vice-chairman,* Maurice L. Moore

Secretary-treasurer, Clinton W. MacMullen

6650 Large Street
Philadelphia, Penna.

Council Representative, Gilbert E. Seil

News Reporter to THE CHEMIST, Kenneth A. Shull

Washington

President, L. F. Rader, Jr.

Vice-president, Donald H. Andrews *Treasurer,* L. R. Heiss

Secretary, Ernest J. Umberger

207 Albany Avenue, Takoma Park, Maryland

News Reporter to THE CHEMIST, T. H. Tremearne

Council Representative, Albin H. Warth

Dr. Milton Harris, Director of Research, The Textile Foundation, Washington, D. C. addressed the Virginia Section of the American Chemical Society, at Waynesboro, October ninth, on "Recent Developments in Textile Fibres".

Dr. H. N. Holmes, president of The American Chemical Society, addressed the Virginia Section of that Society, at the University of Richmond, and also the Blue Ridge Section at Roanoke. His subject was, "Strategic Materials and National Defense".

Meeting Dates—1942

Dec. 18—Meeting of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS at the Chemists' Club, 52 East 41st Street, New York, N. Y. "Raw Materials Supplies for Plastics Manufacturers." Dr. Ralph H. Ball, Plastics and Synthetic Rubber Section, Chemical Branch, War Production Board.

Dec. 28-29—American Chemical Society. Chemical Engineering Symposium, Palmer House, Chicago, Ill. "The Application of Kinetics to Design and Operation of Chemical Engineering Equipment. Ninth Annual Symposium.

Dec. 29-30—American Science Teachers' Association. Hotel Pennsylvania, New York, N. Y.

Meeting Dates—1943

Jan. 8—Perkin Medal Award to Dr. Robert E. Wilson. Joint meeting of Society of Chemical Industry with American Chemical Society, American Institute of Chemical Engineers, the Electrochemical Society, and the Société de Chimie Industrielle.

Jan. 29—Meeting of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. The Chemists' Club, 52 East 41st Street, New York, N. Y. "Synthetic Rubber." Dr. Howard Cramer, Sharpless Chemicals, Inc., Philadelphia, Pa.

Feb. 19—Meeting of Society of Chemical Industry. Details to be announced.

March 5—Meeting of Society of Chemical Industry with American Chemical Society. Presentation of William H. Nichols Medal by American Chemical Society.

April 12-16—American Chemical Society. 105th Meeting. Indianapolis, Indiana.

April 16—Meeting of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. The Chemists' Club, 52 East 41st Street, New York, N. Y. Student Medals to be presented. "Training of the Industrial Chemist." Speaker to be announced.

May 21—Meeting of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. The Chemists' Club, 52 East 41st Street, New York, N. Y. "Ancient Fabrics and Their Application in Modern Design." M. D. C. Crawford, of Fairchild Publications, New York, N. Y.

Sept. 6-10—American Chemical Society. 106th Meeting. Minneapolis, Minnesota.

Dec. 28-30—American Chemical Society. Organic Chemistry Symposium. Boston, Mass. Tenth National Symposium.

The New York Branch of the American Pharmaceutical Association met on October twelfth at Columbia University, College of Pharmacy, New York, N. Y. Current events in the field of pharmacy, both from the national and sectional viewpoint were discussed, including "Selective Service", "Pharmacy Corps", and the "Pharmacy for Victory Campaign".

Gilbert E. Seil, F.A.I.C., spoke on "New Developments in the Production of Magnesia for Refractories", at the Industrial Minerals Division meeting of the American Institute of Mining Engineers, at Bethlehem, Pennsylvania, on Thursday afternoon, October twenty-second, at the Hotel Bethlehem, Bethlehem, Pennsylvania.

QUALITATIVE CHEMICAL ANALYSIS OF INORGANIC SUBSTANCES. By Arthur A. Noyes. *The Macmillan Company*, 1942. 10th Edition. (Revised by Ernest H. Swift). 5½" x 8½", 418 pp. $2.75.

The late professor of chemistry, Arthur A. Noyes, of California Institute of Technology, prepared the eighth edition of this book as "an attempt, on the experimental side, to train the student of qualitative analysis in careful manipulation and exact methods of procedure, such as are commonly employed in quantitative analysis. It is an attempt, on the theoretical side, to make clear to the student the reason for each operation and result, and to accustom him to apply to them the laws of chemical equilibrium, and especially the principles relating to solubility and to the ionization, complex-formation, and oxidation and reduction of substances in solution. It is believed that in both these ways the educational value of the subject is greatly increased."

The revision of this tenth edition has been made by Ernest H. Swift, associate professor of analytical chemistry at California Institute of Technology. The book is divided into two main parts, "The Course of Instruction," and "The System of Analysis." Throughout the course the correlation between experiment and principle has been stressed. Part I consists of "Laboratory Experiments" and is followed by "Questions on the Experiments". Part II, "System of Analysis" is divided into—"The Qualitative Chemical Analysis of Inorganic Substances", and "The Analysis for the Basic Constituents" and "The Analysis for the Acidic Constituents".

The Appendix contains tables on solubilities, molal reduction-potentials, ionization of Acids and Bases, dissociation constants of complex ions, atomic weights, preparation of the reagents, preparation of the test-solutions, and equipment.

This book provides an excellent course of instruction in qualitative analysis.

ULTRA-VIOLET LIGHT AND ITS APPLICATIONS. By H. C. Dake and Jack De Ment. *Chemical Publishing Co., Inc.* 210 pp. 5½" x 8¼". $3.25.

This latest book by the authors of "Fluorescent Light and Its Application" and "Fluorescent Chemicals and Their Application", describes the numerous practical applictions found for ultra-violet light and fluorescence in the industries, sciences, and arts. Only the most important of the innumerable practices and the methods believed to hold the widest practical application and possibilities for future development are discussed.

Chapter headings include: Criminology and Police Science; Military Applications; Advertising — Display — Theatrical; Medical Sciences; Microscopy—Research—Education; Chemistry; Spectroscopy; Petroleum and Mining, and a list of sources of supplies including ultra-violet light units, luminous paints, fabrics, minerals, filters and phosphors.

A reference list of fifty-six books is also of interest.

Those interested in the practical applications of ultra-violet light will find much information of value.

Southwestern University, Georgetown, Texas, inaugurated John Nelson Russell Score as Tenth President of the University on Tuesday, October 6, 1942.

WITHOUT FAME. The Romance of a Profession. By Otto Eisenschiml. *Alliance Book Corporation.* 1942. 368 pp. Price $3.50.

There is a great difference between an oration and a narration. An orator uses words to embellish his theme, while a narrator uses words to describe his subject without ornamentations. This story is a narrative.

Here is the history of a foreign born lad who came to this country with a university diploma, upon which he placed great value until he found that no one even asked him if he had one; and a fixed and earnest determination to succeed, an intangibility which he soon found of great worth.

There is nothing extraordinary in this man's life history, no miracles, no good fairy to supply his wishes, no pots of gold at rainbow ends, and it is because of the absence of these wind-falls that the story is so readable, so real, and so personal.

The reader cannot but be impressed with the sturdy determination to succeed of this young lad as he continually pushes forward to his goal, overcoming pitfalls, surmounting obstacles, smiling at failures and laughing at defeats.

He tells his story so chronologically and with such definiteness to smallest details that it seems to be a diary of daily records, rather than the result of a memory extended over so many years.

Autobiographies are usually dry and uninteresting, seemingly attempts to resurrect dead things and to breathe into them a semblance of life; but here we find a living being who remains alive, active and exciting from the day of his first recollections until he writes "Finis" upon the last page.

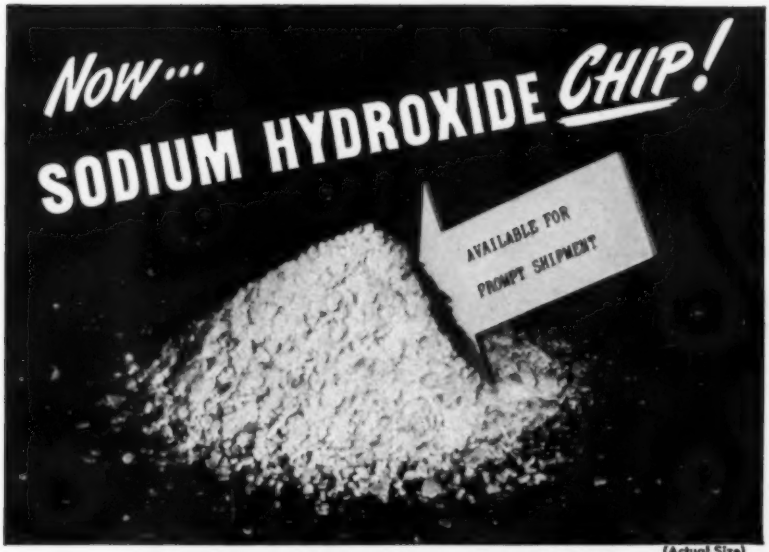
Starting as a cub chemist in the Barbara Furnaces in Pittsburgh, Pa., neutralizing the acid waters of the Chatonquin River for boiler use at fifty dollars a month, this enterprising and insistant lad ran a gamut of employments that reads as if it were the dream potpourri of a deranged mind absorbing information at every step for future use.

The experiences of this youth made him a resourceful chemist, and a philosopher and he records his contacts with men, great and small, with wit and understanding. The author neither saves himself nor praises himself but leaves the verdict to those who follow the recital of his efforts to succeed.

This book is so intimate and so engaging that the reader can but imagine himself sitting by the fireside of the writer, listening to his realistic soliloquies of a life well led and a fame well deserved.

To read "Without Fame", a title illustrative of the author's modesty, is a pleasure seldom attained from perusals of biographies, and it should be read by every chemist as indicative of the possibility of obtaining fame in that science by continued efforts to succeed.

Maurice L. Moore, F.A.I.C., was re-elected to his fourth term as national secretary of Alpha Epsilon Delta, national honorary pre-medical fraternity, at the recent convention of that organization held at West Virginia University, and in addition was assigned the responsibility of editing the fraternity magazine, *The Scalpel.* Dr. Moore is on the staff of the Medical-Research Division of Sharp and Dohme, Glenolden, Penna.



(Actual Size)

Baker & Adamson Announces Sodium Hydroxide CHIP— A NEW CONVENIENT FORM in Reagent A.C.S. and U.S.P. Grades!

Baker & Adamson is pleased to announce the availability of Sodium Hydroxide in a *new* physical form—Chip—in both Reagent A.C.S. and U.S.P. grades.

Sodium Hydroxide *Chip*, aside from being economically advantageous to use, merits the attention of industrial, college and research laboratories, as well as those manufacturers whose processes require material of these purities, for these additional reasons:

★ Easily soluble, because of its small but uniform particle size.
★ Convenient to weigh and handle.
★ Fuses readily with other chemicals.
★ Can be readily ground to powder form.

When Ordering Sodium Hydroxide, Specify Baker & Adamson CHIP

Reagent A.C.S. Grade	*U.S.P. Grade*
Code 2249	Code 2251
¼, 1 and 5 lb. bottles	¼, 1 and 5 lb. bottles
10 and 25 lb. cans	10 and 25 lb. cans
100 and 400 lb. drums	100 and 450 lb. drums

WRITE TODAY FOR PRICES ON THE NEW CHIP GRADES!

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

BAKER & ADAMSON

Reagent Chemicals AND *C.P. Acids*

Division of GENERAL CHEMICAL COMPANY, 40 Rector St., New York

Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh Providence (R. I.) • St. Louis • Utica (N. Y.)

Pacific Coast Technical Service Offices: San Francisco • Los Angeles

Pacific Northwest Technical Service Offices: Wenatchee (Wash.) • Yakima (Wash.)

In Canada: The Nichols Chemical Co., Ltd. • Montreal • Toronto • Vancouver